

CHAPTER 2

Command and Control

Modern warfare demands a responsive C2 system that protects the force, enforces discipline, establishes the warrior spirit, and motivates the soldier to fight. Its essence involves applying leadership; transmitting and receiving information; predicting battle-field events; and synchronizing combat, combat support (CS), and CSS assets. Leadership is one of the essential components of the C2 system. It provides purpose, direction, and motivation in combat. The leader must be a resourceful, tenacious, and decisive warrior. He must be innovative and flexible in the employment of his unit. He must also have the mental agility to quickly grasp the situation and the initiative to take independent action based on the higher commander's intent.

The engineer C2 system must work quickly. The cycle of receiving information, completing instructions, and setting actions in motion must be well organized and efficient. Engineers supporting the light infantry brigade must have a flexible, synchronized, and totally integrated C2 system that allows the military decision-making process to remain ahead of the enemy's actions.

The brigade engineer and the engineer company are the two primary components of engineer C2 in support of the brigade that are examined in this chapter. It also covers the brigade engineer's relationship with the brigade staff and the supporting light engineer company's internal C2 system and process and how the two synchronize their efforts in support of the brigade.

C2 SYSTEM

C2 is the balanced process of directing, coordinating between, and controlling units to accomplish the mission. The brigade commander executes missions through a C2 system consisting of three interrelated components:

- Organization.
- Process.
- Facilities.

The engineer C2 system in support of the brigade is composed of two distinct, yet mutually dependent, participants. They are the—

- Brigade engineer.
- Company commander(s) supporting the brigade.

A properly established and functioning engineer C2 system is a prerequisite to the integrating of other division and EAD engineers into the brigade.

Successful engineer support on the brigade battlefield requires a balanced combination of C2 by the brigade engineer and the company commander. The brigade commander relies on both his brigade engineer and the supporting

engineer unit commanders as the engineer functional-area planners and executors for all engineer-related missions in support of the brigade. The capabilities and flexibility of the engineer C2 system determine the role and effectiveness of supporting engineer units as combat multipliers. METT-T determines the best mix

of engineer C2. However, an effective C2 balance that the brigade engineer and the company commander establish will foster subordinate engineer leader's initiative. This allows subordinate leaders the maximum flexibility to apply initiative on the brigade battlefield in support of the commanders' intent.

BRIGADE C2

The brigade C2 process is one of planning and preparing for and executing of the battle. The brigade commander ensures that his intent is clearly understood by his subordinate commanders throughout the C2 process. The principal component of the brigade C2 process is the military decision-making process.

MILITARY DECISION-MAKING PROCESS

This process begins and ends with the brigade commander and is as simple or as detailed as time permits. The brigade commander plays the central role in the process, with the staff providing advice and information related to its respective areas. The results of the process are preparing synchronized, detailed orders and, ultimately, executing the operation. *Figure 2-1* details the military decision-making process.

ENGINEER ESTIMATE

Engineer input into the brigade's military decision-making process is primarily through the use of the engineer estimate. *Figure 2-2, page 2-4*, shows the relationship between the military decision-making process and the engineer estimate. The engineer estimate begins at higher echelons (division and above) and progresses down to supporting engineer companies. Its effectiveness requires continuous interaction and from-the-bottom-up feedback. *Figure 2-3,*

pages 2-5 through 2-7, shows key aspects of the engineer estimate as it relates to the military decision-making process at the maneuver brigade, the battalion TF, and the engineer company level. *Appendix A* describes the engineer estimate process.

FACILITIES AND FUNCTIONS

The light brigade is controlled by C2 organizations containing more than one echelon. Staff participation varies at each echelon. These organizations include a—

- Tactical CP.
- Main CP.
- Rear CP.
- Command group.

FM 7-30 provides details on the exact composition, function, and layout of the command group and each CP.

The key to establishing an effective engineer C2 organization is to complement the brigade's existing structure. The brigade engineer and the supporting company commander(s) must have a thorough understanding of the brigade C2 structure and the responsibilities of each CP. More importantly, to complement the C2 structure, they must recognize the engineer functions required at each CP. These functions become the driving force behind the engineer C2 structure and system. The brigade C2 organization and process and the

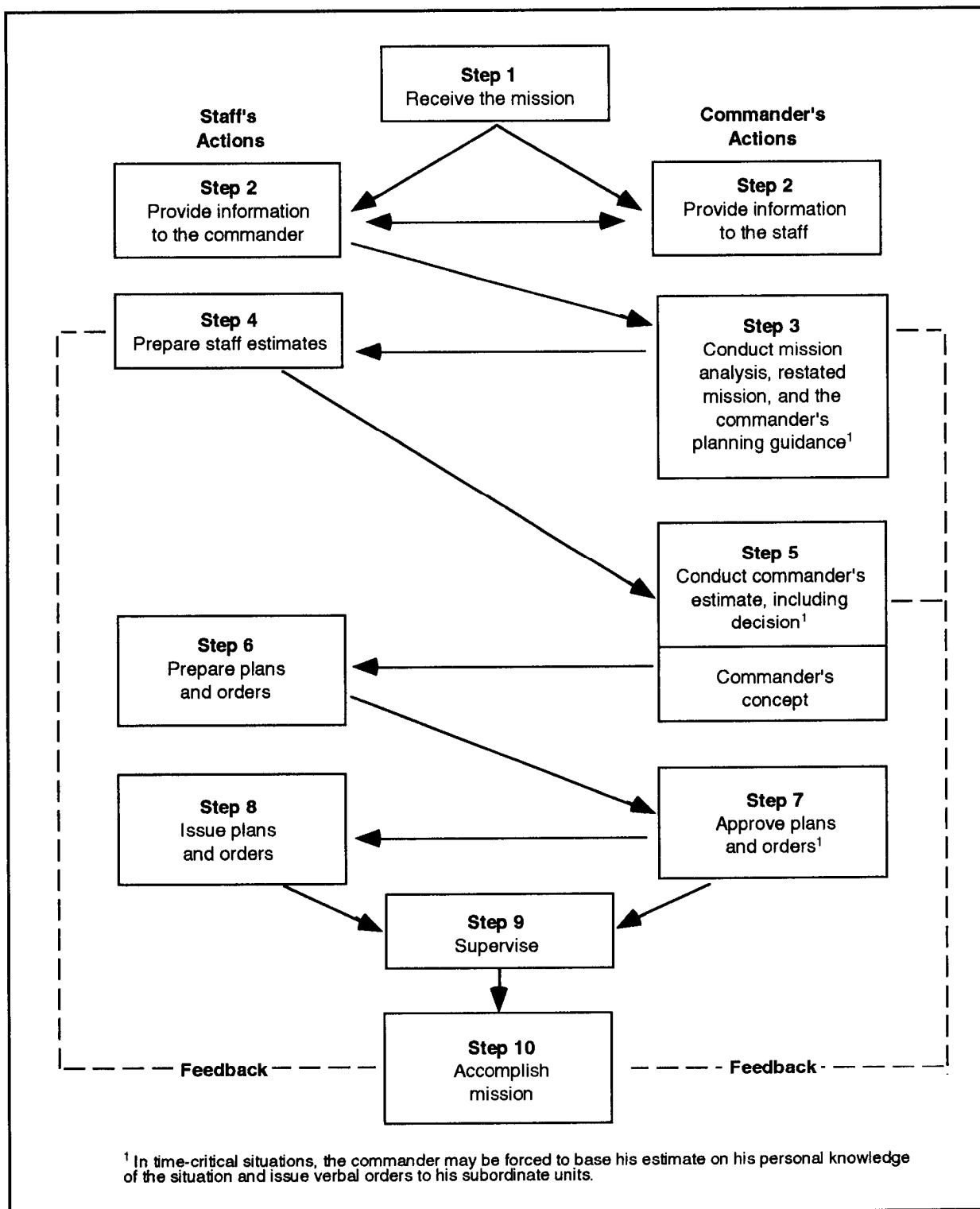


Figure 2-1. Military decision-making process

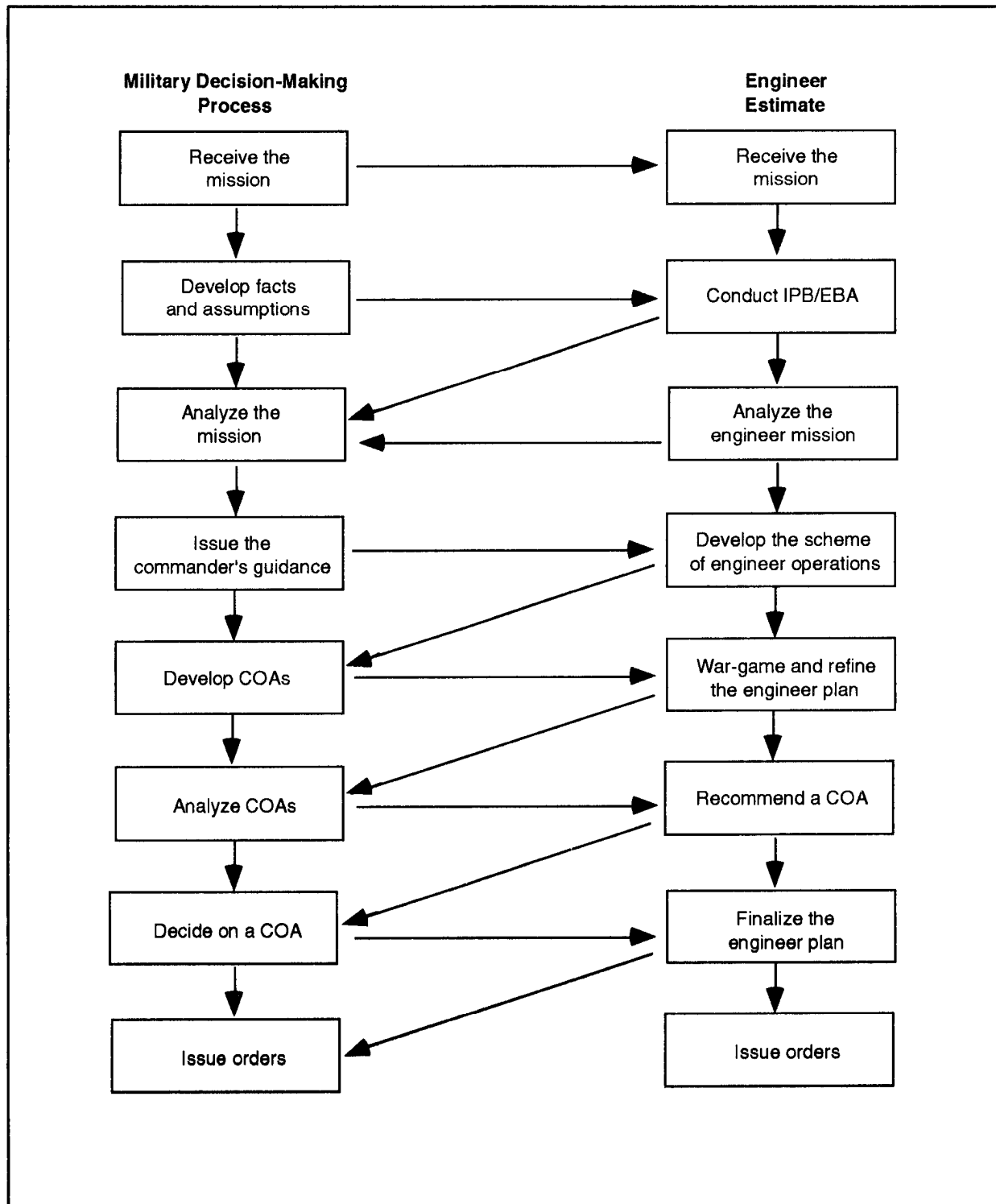


Figure 2-2. Relationship between the military decision-making process and the engineer estimate

Military Decision-Making Process	Engineer Estimate	Actions to Be Taken
Receive the mission	Receive the mission	<p><u>Sources of Information:</u></p> <ul style="list-style-type: none"> • Enemy situation, from the necessary situation paragraph and the intelligence annex • Mission paragraph • Brigade's task organization • Service and support paragraph and annex • Engineer annex <p><u>Determines:</u></p> <ul style="list-style-type: none"> • Types of operations (offense, defense, and entry) • Assets available • Current intelligence picture • Time available (initial estimate)
Develop facts and assumptions	Conduct IPB/EBA	<p style="text-align: center;">IPB/EBA Process</p> <ul style="list-style-type: none"> • Develops facts and assumptions on— <ul style="list-style-type: none"> – Enemy engineer weaknesses/vulnerability – Critical friendly engineer capabilities and requirements • Mutually supports the S2's IPB process (continually) • Breaks the IPB/EBA process into three components: <ul style="list-style-type: none"> – Terrain analysis – Enemy missions and M/S capabilities – Friendly M/S capabilities <p style="text-align: center;">Terrain Analysis</p> <p><u>Sources of Information:</u></p> <ul style="list-style-type: none"> • Brigade S2 through terrain-analysis products produced during the IPB • Modified combined obstacle overlay (MCOO) • Terrain analysis (with the S2) • Observation and fields of fire, cover and concealment, obstacles, key terrain, avenues of approach (OCOKA) • Ground reconnaissance <p><u>Determines:</u></p> <ul style="list-style-type: none"> • Terrain-enhancement requirements for the brigade • Effects of the terrain on friendly and enemy maneuver • Avenues of approach (AAs) • Critical LOCs <p style="text-align: center;">Enemy Mission and M/S Capabilities</p> <p><u>Sources of Information:</u></p> <ul style="list-style-type: none"> • S2's order of battle • Doctrine template of enemy engineer organizations • Enemy engineer personnel/equipment capabilities • Current activities (such as size, activity, location, unit, time, and equipment (SALUTE) reports) <p><u>Determines:</u></p> <ul style="list-style-type: none"> • Situation template of enemy engineer activity and location • Tentative employment of specific engineer equipment and capability critical to the mission (for example, SCATMINES and breaching assets)

Figure 2-3. Engineer estimate aspects relating to decision-making at the maneuver brigade, the battalion TF, and the engineer company level

Military Decision-Making Process	Engineer Estimate	Actions to Be Taken
Develop facts and assumptions (continued)	Conduct IPB/EBA (continued)	<p>Friendly Mission and M/S Capabilities</p> <p><u>Sources of Information:</u></p> <ul style="list-style-type: none"> • Engineers task-organized to the brigade • Refined time estimate (from step one in conjunction with the brigade Operations and Training Officer (US Army) (S3) • Known unit work rates • Availability of critical resources <p><u>Determines:</u></p> <ul style="list-style-type: none"> • Estimate of the total engineer capability for the mission • Impact of new information on the mission; this process is continuous. • Critical resource impacts on the mission
Analyze the mission	Analyze the engineer mission	<p><u>Sources of Information:</u></p> <ul style="list-style-type: none"> • Higher HQ mission • Commander's intent (analyze two levels up) • Scheme of maneuver (paragraph 3) • Scheme of engineer operations (paragraph 3) • Subunit instructions (paragraph 3) • Coordinating instructions (paragraph 3) • Service and support (paragraph 4) • Command and signal (paragraph 5) • Engineer annex <p><u>Determines:</u></p> <ul style="list-style-type: none"> • Specified M/S tasks • Implied tasks (analyze the mission with facts and assumptions) • Assets available (entire brigade TF) • Limitations (constraints and restrictions) • Risk as applied to an engineer capability • Time analysis (time line) • Essential tasks (specified and implied tasks that are critical to the mission) • Restated mission
Issue the commander's guidance	Develop the scheme of engineer operations	<p><u>Sources of Information:</u></p> <ul style="list-style-type: none"> • Brigade commander • Brigade S3/executive officer (XO) • Maneuver courses of action (COAs) • Relative combat-power analysis <p><u>Determines:</u></p> <ul style="list-style-type: none"> • Tailoring of scheme of engineer operations • Engineer priority of effort/support • Higher commander's intent for M/S operations within the brigade sector • Employment considerations of engineers; the brigade engineer assists in the staff's maneuver COA development. • Tailored engineer scheme of operations for each maneuver COA (Complete engineer plans for each COA are not developed; they are just concepts.) • Engineer missions and allocation of forces/assets. (Hasty assessment tools, such as belt planning, blade-hour estimates, or breach lane requirements, are used to quickly evaluate each COA to determine if adequate assets are available to support the plan.) • Integration of engineer scheme of operations into maneuver COA (continuous process during this step)

Figure 2-3. Engineer estimate aspects relating to decision-making at the maneuver brigade, the battalion TF, and the engineer company level (continued)

Military Decision-Making Process	Engineer Estimate	Actions to Be Taken
Develop COAs	War-game and refine the engineer plan	<p><u>Sources of Information:</u></p> <ul style="list-style-type: none"> • Staff analysis. (Identifies the best COA to recommend to the commander) • War-gaming techniques (outlined in <i>Student Text (ST) 100-9</i>) They are used to visualize the flow of the battle (each COA is independently war-gamed). • Advantages/disadvantages analysis of a given COA relative to another <p><u>Determines:</u></p> <ul style="list-style-type: none"> • Scheme of engineer operations that best supports the maneuver plan • Weaknesses in the engineer plan to make adjustments, such as— <ul style="list-style-type: none"> – Shifting assets to the main effort – Shifting engineer priorities – Recommending to the commander to accept risk at a specific time – Requesting additional engineer assets from higher headquarters • Integration of enemy engineer assets and actions as the S2 plays the enemy force • Engineer scheme of operations that best supports mission accomplishment
Analyze COAs	Recommend a COA	<p><u>Sources of Information:</u></p> <ul style="list-style-type: none"> • Combined staff analysis of the COAs during war gaming • Higher and adjacent engineer unit task organizations <p><u>Determines:</u></p> <ul style="list-style-type: none"> • Unified recommendation to the commander on which COA is best (engineer is prepared to inform the commander where risk must be accepted or what additional assets are needed to avoid risk). • Recommended COA for commander's decision • Recommended COA for commander's guidance
Decide on a COA and issue orders	Finalize the engineer plan and issue orders	<p><u>Sources of Information:</u></p> <ul style="list-style-type: none"> • Commander's approved COA • Initial mission analysis (identify all specified/implied tasks) • Accepted engineer scheme of operations <p><u>Determines:</u></p> <ul style="list-style-type: none"> • Final engineer task organization • Final coordination with the staff on approved COA • Input to basic OPORD (scheme of engineer operations, subunit instructions, coordinating instructions, and engineer annex) • Engineer participation in the OPORD brief

Figure 2-3. Engineer estimate aspects relating to decision-making at the maneuver brigade, the battalion TF, and the engineer company level (continued)

corresponding engineer functions in support of the brigade are discussed in this chapter.

Tactical CP

When active, the tactical CP controls the close operation and is established in the main battle area (MBA) near the forward battalions. This allows the commander to be close to his subordinate commanders where he can directly influence operations. The tactical CP is structured to synchronize and coordinate—

- Maneuver.
- Fire support.
- Engineer operations in the brigade close battle.

When fully active and staffed, the tactical CP serves as the net control station (NCS) for brigade and battalion reports. It receives, posts, and analyzes reports from the maneuver battalions and responds to immediate tactical requirements. The tactical CP analyzes and disseminates combat intelligence for the close operation. It also provides centralized synchronization of fires to committed forces within the brigade. When the tactical CP is not active, the main CP assumes all its C2 responsibilities.

Main CP

The heart of the brigade C2 organization is the main CP. The main CP is designed to provide the brigade with the capability of “seeing the total battlefield” in the current operation and simultaneously plan future operations. While conducting the current operation, the main CP—

- Prepares and issues fragmentary orders (FRAGOs).
- Tracks operations.
- Coordinates the allocation of resources.

- Establishes priorities.

The main CP sees the battle through reports from the tactical CP, rear CP, and subordinate units. When there is an active tactical CP, most information that arrives at the main CP is assumed to be historical and of insufficient amount to help make timely tactical maneuver decisions. Therefore, the role of the main CP in current operations is to respond to requests for immediate support by the tactical and rear CPs. The main CP also ensures that decisions made by the tactical and rear CPs are rapidly coordinated and effectively conducted. The main CP monitors the operations of higher and adjacent units and provides this information to the tactical and rear CPs. The main CP assumes C2 of close operations if the tactical CP is moving, destroyed, or inactive.

Rear CP

The rear CP focuses on the C2 of all units located within the brigade rear area. It synchronizes and sustains rear operations for the brigade battle. The rear CP is only an extension of the main CP because it is not manned or equipped to conduct current operations and simultaneously plan future rear operations. The rear CP is located in the brigade support area (BSA) and is manned by the brigade Adjutant (US Army) (S1) and S4 and the coordinating elements of the FSB.

The rear CP’s primary C2 role is to ensure that rear operations are synchronized and integrated with close and deep operations. Units operating in the rear area provide operation and unit status reports to the rear CP. The rear CP controls movement within the brigade rear area. It also forwards the status of rear operations and units to the main CP.

The rear CP analyzes future brigade plans for their impact on current and future rear

operations. This allows the rear CP to ensure that the necessary sustainment support is available. The rear CP is also responsible for planning, coordinating, and synchronizing rear security. It assigns units to bases and base clusters and appoints commanders for each. The rear CP also develops and controls the total rear defensive plan. The rear CP monitors activities in the brigade's rear areas to prevent potential conflicts. Lastly, the rear CP may assume control of the current close fight, if augmented, when the main and tactical CPs can no longer function.

Command Group

The command group consists of the brigade commander and selected members of his

staff. It is not a fixed organization but is tailored to meet the C2 needs of the mission and the current tactical situation. The commander identifies the critical events requiring his personal influence. He also anticipates the rapid decisions and orders that will be required and tailors the command group to provide the necessary expertise. The command group normally moves forward from the tactical CP and initially positions itself with the main effort. This forward position allows the brigade commander and selected staff to see the battle, directly influence the action, and make face-to-face contact with battalion commanders, as required. When the brigade commander needs to make critical engineer decisions, he may require the brigade engineer to be part of his command group.

ENGINEER C2 AT BRIGADE LEVEL

The essence of effective engineer C2 is the uninterrupted integration of engineer planning for and the functional control of engineer assets supporting the light brigade. The engineer staff presence at each of the brigade CPs serves two primary functions. They provide the—

- Expertise at the brigade staff level to integrate engineers into all facets of brigade planning and execution.
- Functional control for engineer units to execute the engineer missions in support of deep, close, and rear operations.

Functionally, the maneuver brigade tactical, main, and rear CPs are the same in every light brigade. For each of the three brigade CPs the brigade commander establishes, corresponding engineer functional responsibilities exist, regardless of the tactical situation. These responsibilities are the same in each CP. The staff engineer works with the CP staff to set priorities for

these responsibilities, based on the situation, determining the ones on which to focus his available resources. Rarely will all of the responsibilities be addressed because of time and manpower constraints.

Engineer C2 within the brigade must be responsive to changes in engineer capabilities, limitations, and sustainment requirements caused by changing engineer task organizations. It must also be capable of expanding or reducing its control capabilities to remain proactive to a changing engineer force size and organization in the brigade AO. The functions and responsibilities of the engineer cells established to support the brigade C2 process are discussed in the following paragraphs.

ENGINEER CELLS

There are three engineer cells established to provide engineer support to the light infantry brigade C2 organization. They are the—

- Tactical engineer cell in the tactical CP.
- Brigade main engineer cell (BMEC) in the brigade main CP.
- Brigade rear engineer cell (BREC) in the BSA, which is linked to the brigade rear CP.

The actual size, composition, and organization of the engineer cells supporting each

brigade CP depend on the brigade commander's needs, the current operational status of the brigade, and the level of engineer support needed by the brigade.

The BMEC and BREC are the two principal cells; however, as the situation requires, the tactical CP and the supporting tactical engineer cell are established. *Figure 2-4* shows a sample laydown of these engineer cells. It

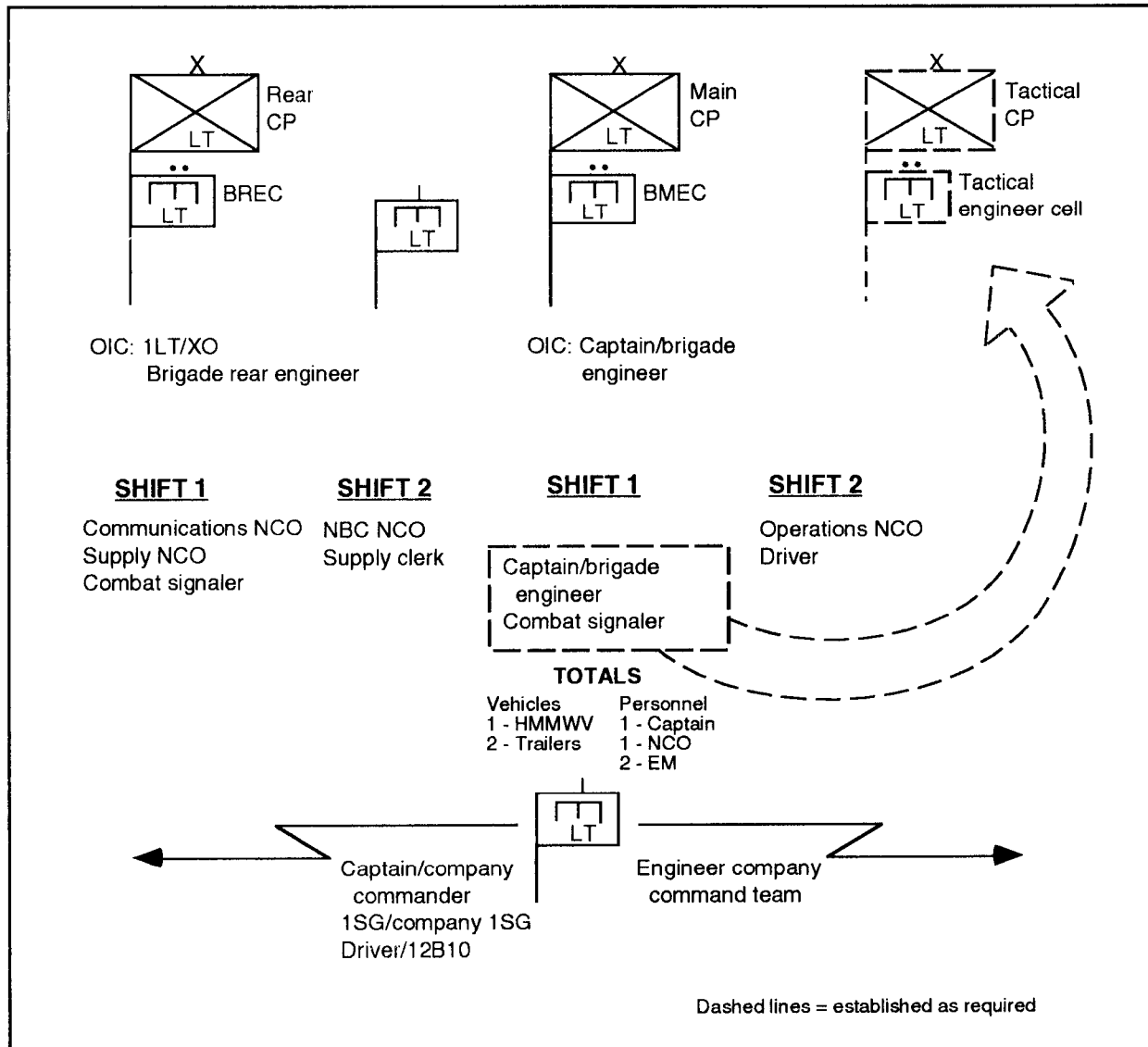


Figure 2-4. Sample laydown of the C2 CP and the supporting engineer cells

also shows the positioning of key leaders of a supporting light engineer company. Although the figure shows a division light engineer company, the engineer C2 organization is established so that it allows the use and integration of any engineer company providing support to the brigade for an extended period.

The BMEC and BREC each have an officer in charge (OIC). Both cells must have the capability to sustain 24-hour operations. The BMEC must also be capable of providing situational staff support to the brigade tactical CP without degrading mission performance at the brigade main or rear CPs.

The BMEC and BREC serve as the nucleus for all future and current engineer operations planning and execution within the brigade C2 organization. As more engineer units are task-organized to support the brigade, the brigade engineer's capability to track, monitor, plan, and control engineer activities must also expand. This ensures that the engineer C2 system remains proactive to the changing brigade battlefield. The ability of the BMEC and BREC to expand their C2 capabilities is derived from the assets and C2 capabilities of supporting engineer units. To establish and integrate engineer C2 with the existing brigade C2 organization requires an understanding of the brigade engineer's key C2 duties and responsibilities.

Tactical Engineer Cell

The tactical engineer cell assumes control of the current close engineer fight when the brigade tactical CP deploys. The tactical engineer provides information about the engineer current close operation to the brigade commander so he can make timely decisions. In this position, the tactical engineer must—

- Track the status of engineer missions and units in current close operations.

- Provide engineer expertise to the brigade commander.
- Pass critical engineer requirements that affect the current close fight to the brigade main CP, as necessary.

Depending on the commander's requirements, the tactical engineer cell will be derived from the BMEC or the supporting engineer company. Normally, the brigade engineer or the company commander executes the duties as the brigade tactical engineer.

Brigade Main Engineer Cell

The BMEC is the nucleus for all M/S planning and synchronization to support brigade operations. The division light engineer battalion detaches its brigade engineers to habitually associated brigades to—

- Provide engineer staff support to the infantry brigade's planning and execution process.
- Establish the BMEC and the base for engineer C2 for the brigade.
- Conduct uninterrupted 24-hour operations.

The primary missions of the BMEC are to—

- Integrate and synchronize engineer battlefield functions into future brigade plans.
- Track the current battle.
- Develop the necessary input to brigade orders, annexes and, as required, engineer unit orders.

Its major functions are to—

- Develop a scheme of engineer operations concurrently with the brigade maneuver COAs.

- Prioritize and recommend the allocation of engineer personnel, equipment, logistics, and units.
- Provide timely input to the brigade on requests from the TF engineers, recommending immediate tactical support.
- Issue timely instructions and orders to subordinate engineer units through the brigade base order to simplify subordinate planning, preparation, execution, and battlefield integration.
- Monitor the execution of engineer orders and instructions in the brigade sector.
- Track all M/CM/S and general engineering aspects of all current operations.
- Establish a direct link to task-organized TF engineers.
- Track current engineer operations according to brigade directives.
- Work closely and continually with the brigade S2 in the IPB.

Current Operations. The BMEC is responsible for providing the main CP with current engineer information that is needed to see the total battlefield. To accomplish this, the BMEC relies heavily on reports from supporting engineer companies, the tactical engineer, and the BREC. Because of this functional requirement, the BMEC is the central C2 node for all engineer reports. There are two basic categories of reports consolidated at the BMEC:

- Engineer-mission status reports.
- Engineer-unit combat-power reports.

The information that is gathered is normally historical; and the BMEC uses it to analyze the current scheme of engineer operations, anticipate conflicts, and form the basis for planning transitions to future operations.

The BMEC maintains its own situation maps. It also ensures that mission-critical engineer information posted on maps within the brigade main CP is accurate, pertinent to current operations, and up to date.

As the current battle develops, the tactical CP receives requests for immediate support from the maneuver battalions. The brigade commander makes decisions in response to these requests and issues FRAGOs to the battalions. His decisions are then forwarded to the main CP for coordination. When the decisions involve engineer operations or engineer forces, the tactical engineer ensures that the BMEC receives them and any support requirements. The BMEC then works closely with the main CP to completely resource and synchronize the current operation.

Another source of requests for immediate tactical support is the brigade rear CP. It makes decisions for adjustments to the current rear operation. Likewise, when these requests involve adjustments to the scheme of engineer rear operations or engineer forces, the BREC forwards requirements to the BMEC for coordination and, as required, resourcing.

The BMEC must also track combat intelligence reports from the division and brigade tactical CPs and the rear CP. The tactical engineer and the BREC must anticipate intelligence information that impacts current and future close and rear operations. They also ensure that the information is passed directly to the BMEC. Similarly, the BMEC must aggressively track the intelligence reports received by the S2 cell in the main CP and forward information affecting the current operation to the tactical engineer and the BREC.

Finally, the BMEC is responsible for monitoring current engineer operations and coordinating with adjacent engineer units

and the parent engineer battalion HQ. The BMEC maintains the necessary data base for the transfer of critical engineer information to adjacent or relieving units, as required.

Future Operations. When the brigade receives a FRAGO, the brigade engineer assists the main CP in processing the order and gathering the information necessary for future planning (see Figure 2-5). It is vital that the brigade engineer also notify the supporting company commander, as soon as possible, to ensure his early involvement in the planning process. The BMEC receives—

- Critical information and engineer input on the current fight from the tactical engineer cell.
- Logistical considerations and engineer input on the current rear fight from the BREC.

The brigade engineer and the company commander develop the scheme of engineer operations for COAs produced by the main CP. In developing the scheme of engineer operations, the BMEC considers the engineer requirements to support the total future operations (deep, close, and rear).

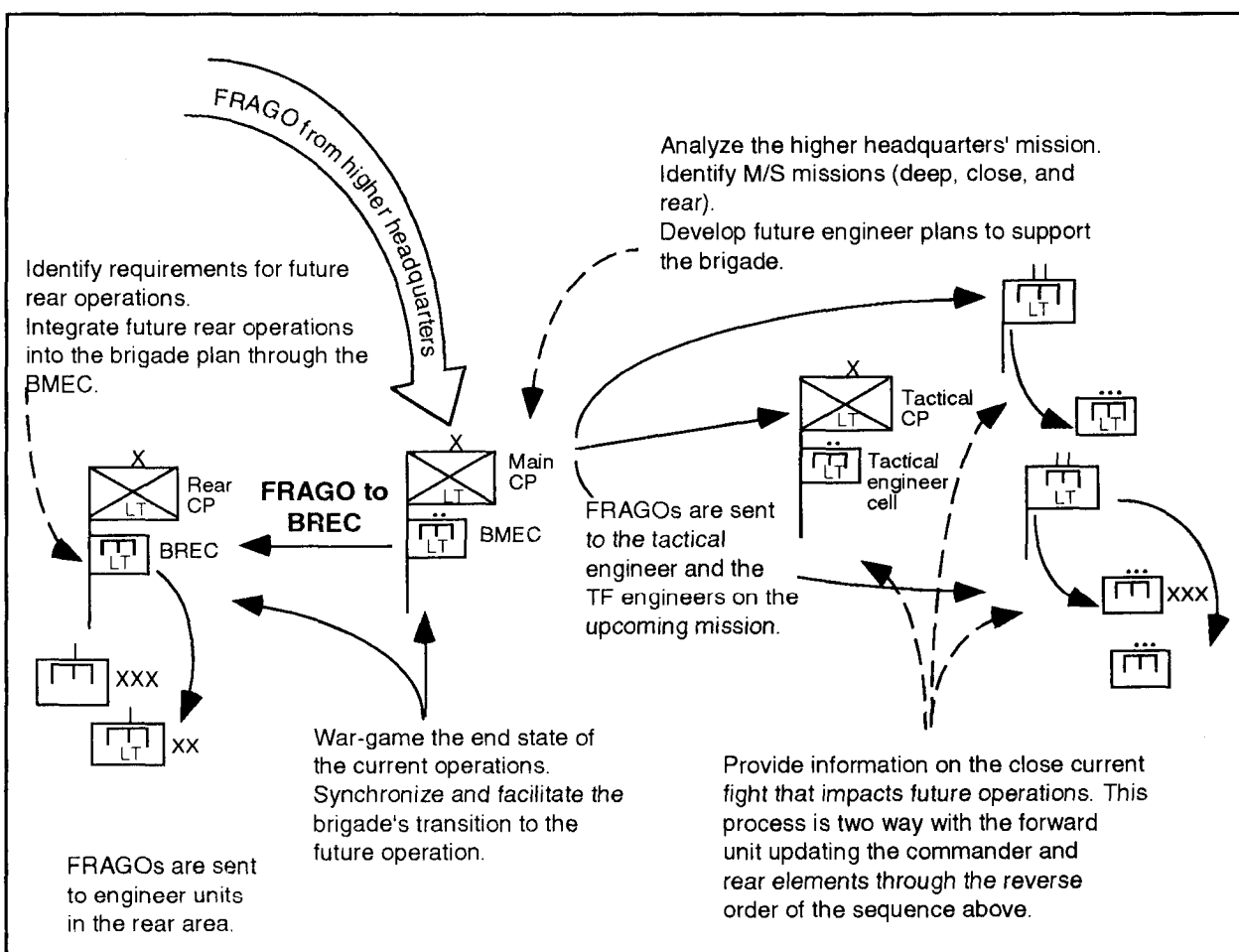


Figure 2-5. Processing the FRAGO

The BMEC works closely with the main CP in identifying critical engineer missions, allocating the necessary engineer forces, and recommending an engineer task organization. The brigade engineer prepares engineer input for the brigade base OPOD or FRAGO, as well as the engineer annex, when required. Once the brigade engineer develops the scheme of engineer operations, the company commander completes his unit planning. To simplify parallel planning, the brigade engineer issues warning orders (WARNORDS) and updates the tactical engineer, the BREC, and subordinate engineer units as the plan develops.

Under this C2 structure, the location, focus, and span of control of the company command team (commander and first sergeant (ISG)) remain flexible. The command team normally focuses on engineer control of the current operation to—

- Provide information to the brigade staff on future operations.
- Ensure engineer unit integration.
- Ensure that the brigade commander's intent is reflected in the engineer plan.

Brigade Rear Engineer Cell

The BREC is the nucleus for M/S planning and synchronization to support brigade rear operations. The task-organized engineer company (or larger unit) provides C2 augmentation support to engineer C2 at the brigade level by establishing the BREC. Depending on mission requirements, the supporting engineer unit can also provide support to the infantry battalions' TF engineers.

Frequently, the BREC operates out of the engineer unit CP that is located in the BSA, close to the brigade rear CP. As engineer units are task-organized to the brigade, the

level of engineer battlefield functions increases. This requires either full-time engineer support or some level of engineer staff support to the brigade rear CP.

Current Operations. The primary mission of the BREC is twofold. It—

- Integrates and synchronizes M/S battlefield logistical requirements with the brigade rear CP.
- Provides required data to the BMEC for future brigade plans.

Its major functions are to—

- Monitor the current close battle (through mission and unit combat status reports of its subordinate platoons and the BMEC) and track the current rear battle.
- Develop the necessary input to brigade orders, annexes and, as required, engineer unit orders.
- Coordinate future engineer mission sustainment needs of the unit with the brigade rear CP and the FSB.
- Assist the BMEC in developing an engineer estimate of the work needed in the brigade rear area.
- Provide the brigade rear CP with the engineer information and expertise needed to make immediate tactical decisions on the current rear operation. When decisions involve engineer operations in the rear area, the BREC recommends the necessary adjustments in engineer support.
- Monitor, analyze, and troubleshoot current rear-area engineer operations and forward reports to the BMEC, as required. Engineer units working in the brigade rear report the status of engineer missions directly to the BREC.

Future Operations. The BREC is also responsible for assisting the rear CP in analyzing future plans to ensure that the necessary sustainment support is planned for future operations. Specifically, the BREC looks at the engineer missions required in the rear area to sustain the brigade. The BREC also provides the rear CP with countermobility, survivability, and force protection expertise in planning base and base-cluster defenses. It helps identify resource requirements for future general engineering, base-cluster defenses, and force protection, forwarding them to the BMEC. Furthermore, the BREC identifies engineer logistic issues for the brigade engineer, the brigade S4, and the FSB that affect the ability of engineer units to perform missions for future operations.

Finally, the BREC assists the brigade rear CP in tracking all engineer aspects of the current fight in the event that the brigade rear CP has to assume control of the battle. The BREC must maintain situation maps and track critical engineer information parallel with that of the BMEC. The BREC must be capable of assuming the duties of the BMEC, if required.

ENGINEER FUNCTIONS

The following paragraphs explain in detail the duties and responsibilities of each engineer staff element of the engineer cells.

Duties and Role of the Brigade Engineer

The brigade engineer is the primary engineer staff planner for the brigade commander. He is task-organized from the division light engineer battalion by the division engineer and is responsible to the brigade commander for—

- Providing organizational focus.
- Synchronizing cohesive engineer support for the entire brigade.

As a special staff officer, the brigade engineer is the principal engineer advisor to the brigade commander and the rest of his staff. The brigade engineer is responsible for integrating specified and implied engineer tasks into the brigade plan. He also ensures that supporting engineer units are completely integrated into the brigade's mission planning, preparation, and execution. This task is usually one of the most challenging and is only successful with the full support of the supporting company commanders.

Staff Responsibilities. The brigade engineer's primary duty is to plan, coordinate, and facilitate the execution of engineer missions in support of the commander's scheme of maneuver. In this role, he must—

- Integrate engineer battlefield functions into future brigade plans and develop the necessary input to brigade orders, annexes and, as required, engineer unit orders.
- Make time-sensitive engineer decisions on requests received from the TF engineers for immediate tactical support.
- Train the brigade engineer cell located at the brigade main CP.
- Establish the BMEC and integrate the BREC into brigade C2 operations.
- Formulate ideas for engineer support to meet the brigade commander's intent.
- Visualize the future state of engineer operations in the brigade.
- Recommend to the brigade commander the engineer priorities of effort and support and the acceptable mission risks.
- Determine and evaluate critical aspects of the engineer situation.
- Decide what engineer missions must be accomplished to support the brigade's current and future fights.

- Prioritize and recommend the allocation of engineer personnel, equipment, logistics, and units.
 - Develop a scheme of engineer operations concurrently with the brigade maneuver COAs.
 - Integrate the necessary orders and instructions into division plans and orders.
 - Issue timely instructions and orders to subordinate engineer units through the brigade base order to simplify preparation and integration.
 - Monitor the execution of engineer orders and instructions by tracking the current fight.
 - Alter the engineer plan using the feedback received from the maneuver battalions and engineer units, as required.
 - Coordinate with the division engineer on the following:
 - DIVEN plans.
 - Status of brigade engineer missions.
 - Identification of any brigade requirements for division or EAD engineer assets to support the brigade.
 - Make the brigade commander aware of the capabilities, limitations, and employment considerations of supporting engineers.
- are necessary to support the brigade plan).
 - Establishing and maintaining a continuous and open link between all engineer cells, TF engineers, and supporting engineer CPs.
 - Using his mission analysis and continuous link with the supporting company commander(s) to compute resource and force requirements and to recommend engineer task organization.
 - Developing specific engineer missions and conveying them to subordinates through the brigade order and engineer annex.
 - Using the brigade engineer cell and supporting engineer unit C2 organizations to hear, see, and understand all engineer battlefield functions within the brigade.
 - Using supporting engineer unit CPs to measure, report, and analyze engineer performance and anticipating change and unforeseen requirements.

Duties and Role of the Brigade Rear Engineer

The brigade rear engineer is normally the XO of the company habitually task-organized to the brigade. His primary functions are—

- Engineer staff representative to the brigade rear CP.
- Company XO (detailed later in this chapter).

The brigade rear engineer's principal focus is monitoring rear-area engineer operations; anticipating future engineer rear requirements; ensuring the execution of engineer mission sustainment; and coordinating engineer future mission logistic

Functional Control Responsibilities.

Regardless of the task organization, the brigade engineer is responsible for the functional control, through the brigade commander, of all engineer units in support of the brigade. The brigade engineer exercises functional control by—

- Regulating the functions of the engineer organization (this is done by identifying the engineer missions that

requirements with the BMEC, the brigade rear CP, and the FSB. The brigade rear engineer is also responsible for—

- Providing engineer expertise in the brigade rear area and effecting direct coordination with all brigade rear-area CS and CSS elements.
- Establishing and running the BREC (normally the engineer company CP), which provides a 24-hour operational capability.
- Assisting the brigade engineer in developing an engineer estimate of the work needed in the brigade rear area by analyzing the division FRAGOs and preparing logistics estimates (these estimates define engineer requirements for rear operations to support future missions and unit logistics requirements based on the unit's current and projected CSS posture).
- Monitoring and providing the status of engineer missions done in the brigade rear to the BMEC.
- Providing functional control for engineer units committed to rear-area engineer missions by the brigade.
- Providing the rear CP with the information and expertise needed to make immediate tactical decisions on the current rear operation.

When decisions involve engineer operations in the rear area, the BREC recommends the necessary adjustments in engineer support. The BREC ensures that the decisions of the rear CP are forwarded to the BMEC for coordination and implementation. When the rear operation requires other engineer resources, the BREC estimates this requirement and forwards the request to the BMEC for action.

Engineer C2 Process

The engineer C2 process in support of the brigade is one of planning, directing, coordinating, and controlling the battle. It is initiated through the brigade commander's intent, concept of the operation, and mission plans. The process depends on assigning tasks to subordinate and supporting engineer units to accomplish assigned missions. The cycle of acquiring information, making decisions, and issuing instructions must allow the brigade to seize the initiative and maintain momentum over the enemy. The brigade engineer and the company commander, through the support of the engineer CPs, must be able to decipher the flood of information and determine which information is necessary for the brigade commander's decision making.

Two vital components of the brigade-level engineer C2 process are the—

- Brigade engineer.
- Company commander.

Together, they must establish a synchronized and continuous procedure of information management and exchange. They must also establish a proactive C2 process to effect C2 for engineer assets supporting the brigade. Engineer C2 cannot exist within the brigade without this joint effort employing all available assets to help the common C2 goal.

C2 Communications

Communications between the brigade engineer and the company commander must be open and direct. The brigade engineer exercises functional control over the engineer assets in the brigade area following the brigade commander's intent, with input from the company commanders. Functional control means that the brigade engineer plans, manages, directs, and tracks engineer activities and assets in the brigade area.

However, he does not execute command over these assets.

Communications and information management are key to the C2 process. The BMEC receives engineer mission and status reports directly from the TF engineers, the BREC, and the engineer commanders (see *Figure 2-6*).

Additionally, it receives battlefield information from within the brigade main CP through spot reports. The BMEC organizes, updates, and manages all engineer-mission-related information within the brigade sector. It must have the most current update of engineer operations within the

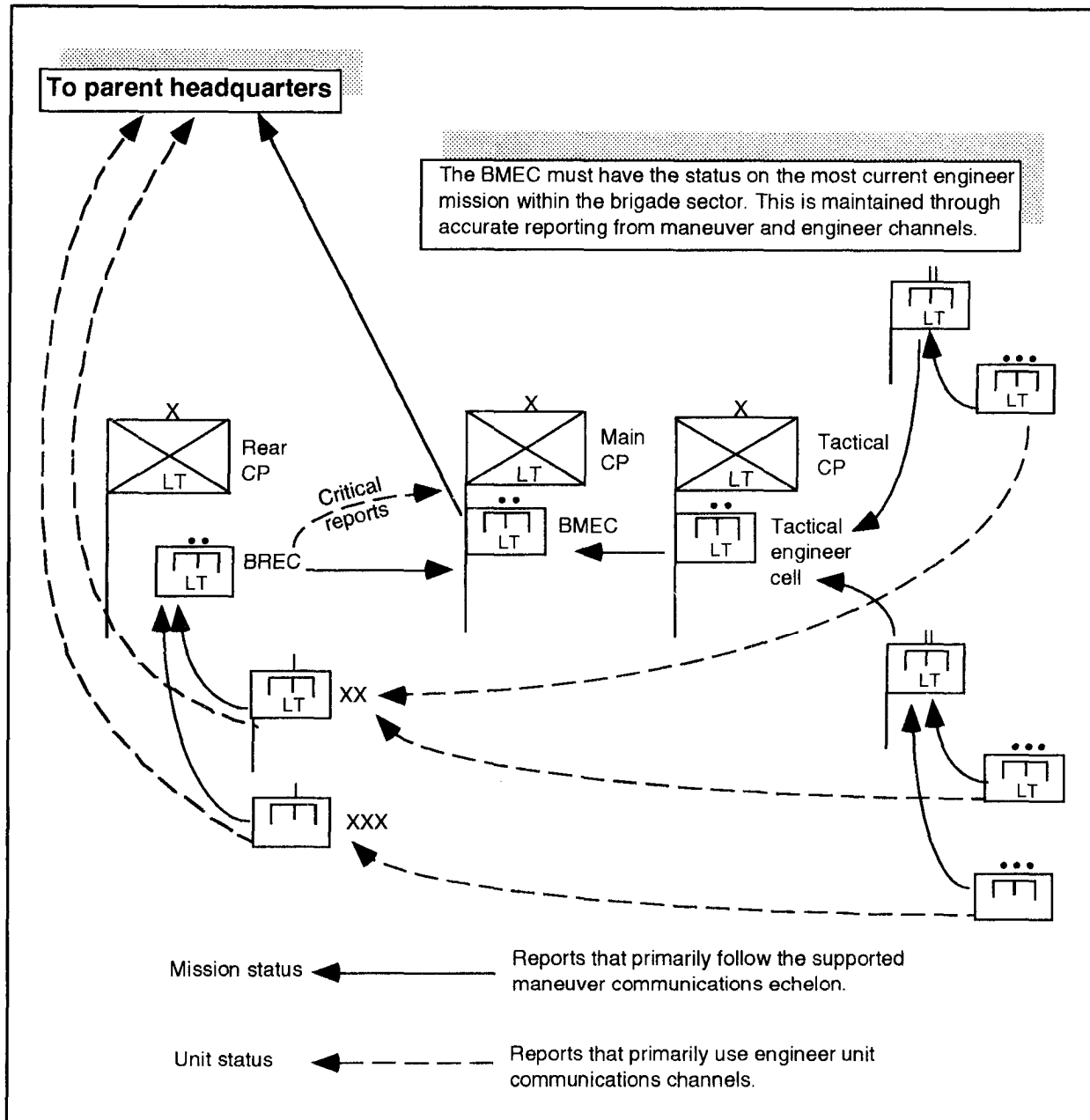


Figure 2-6. C2 communications

brigade sector. The brigade engineer is responsible for submitting all operational reports to the next higher engineer HQ. The company CP is responsible for submitting all noncritical administrative and logistics reports to the next higher engineer HQ.

Communications between all engineers enable the brigade engineer and engineer unit commanders to influence the battle. Influencing the battle is the effect of C2. Journals are maintained at each engineer cell to record the events that portray the battle. By receiving and managing engineer mission and status reports, the engineer unit commander is able to make informed decisions that influence the battle.

While the brigade engineer establishes the base for the engineer C2 process at the brigade, the company commander provides him with an assessment of the current fight. The brigade engineer's vision of the battlefield is limited to the accuracy and the frequency of situation reports coming to the brigade main CP. The company commander provides quality control to all planning figures that the brigade engineer has integrated into the brigade's plan. He also makes recommendations on the task organization and the employment of corps engineers in the brigade sector. The corps engineer units must provide an engineer liaison officer (LO) to the BMEC if they are operating in a direct support (DS) or general support (GS) role within the brigade sector. However, if they are under operational control (OPCON) or attached, the established DIVEN chain of C2 should be sustained. The DIVEN commander may establish a situational C2 organization when there are more than two engineer companies task-organized to the brigade.

Engineer Input to the Brigade OPORD

A critical by-product of the brigade engineer's and the company commander's

coordination and synchronization during the brigade's military decision-making process is integrating engineer missions and instructions into the brigade OPORD and the engineer annex. Engineer information and instructions are not just consolidated in the engineer annex. The brigade engineer must ensure that the necessary M/S missions and instructions are included in the appropriate areas throughout the brigade OPORD. This ensures that critical M/S information and instructions are not hidden from subordinate commanders. For example, if it is critical to the brigade plan to identify and mark two lanes to enable a covering force to pass through the brigade sector, then it may appear as a specified task to the battalion(s) that the lanes pass through. Likewise, the enemy's recent integration of SCATMINES into its preattack fires may indicate its intentions. This should be included in the enemy situation paragraph of the FRAGO.

The scheme of engineer operations is another example of engineer information contained in the brigade OPORD. It describes the general concept for engineer support to the brigade operation, usually concentrating on the close battle. The engineer estimate identifies critical M/S information and mission-essential tasks for inclusion in the base order. *Figure 2-7, page 2-20*, illustrates how key components of the engineer estimate process drive engineer input into the brigade OPORD.

At the brigade level, most OPORDs and detailed FRAGOs have an engineer annex attached. The annex conveys critical engineer information and engineer-specific instructions that are either too large or not appropriate for inclusion in the base order. The annex may take the form of written instructions, matrices, overlays, or a combination of these. *Appendix B* covers the format and content of the annex in more detail and provides some sample matrices and

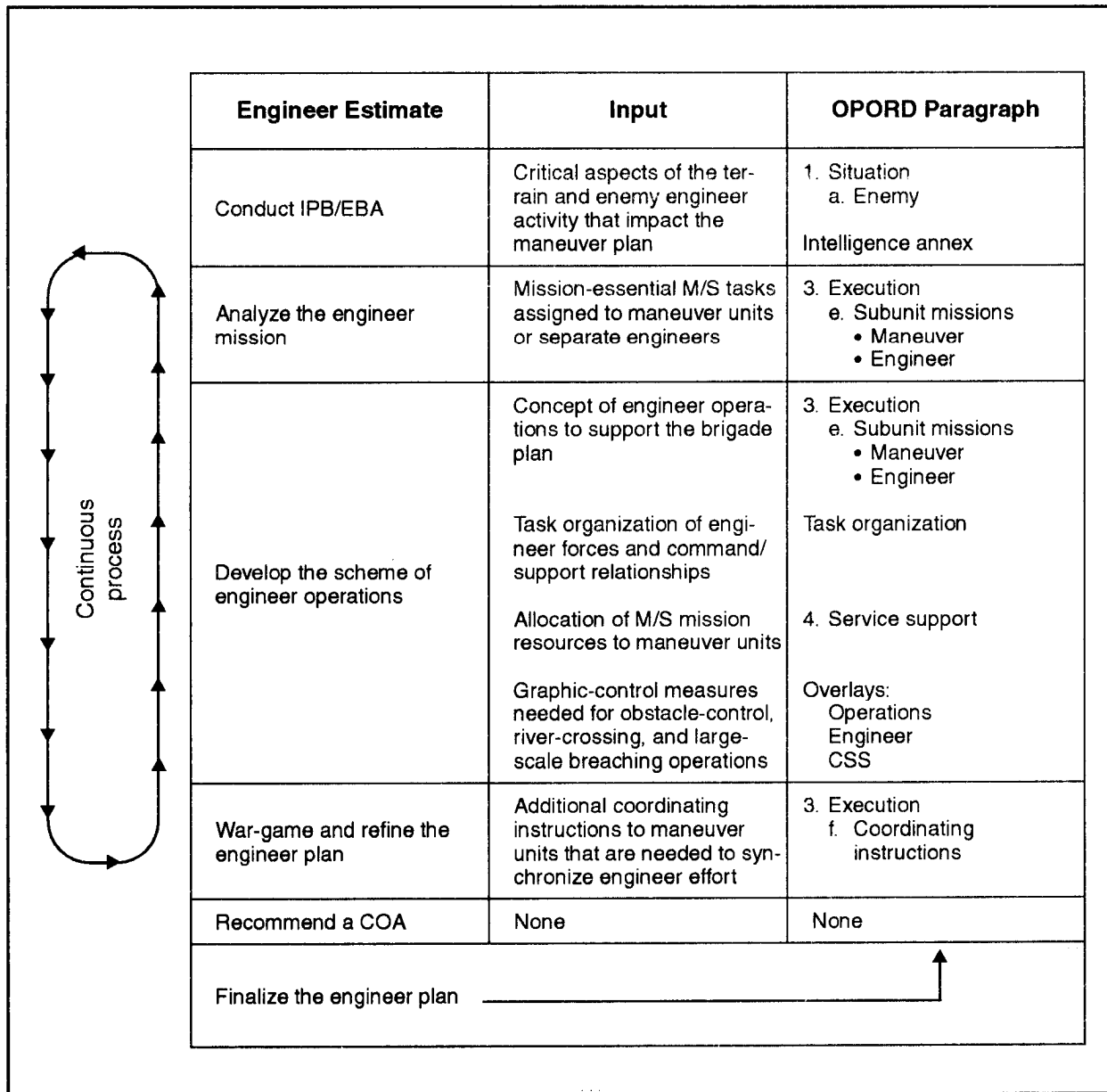


Figure 2-7. Relationship of the engineer estimate to the brigade OPORD

overlays. *Figure 2-8* illustrates how the content of the annex is derived from the engineer estimate process.

Staff Surge

Massing or surging the brigade staff is only a temporary technique used to quickly

facilitate deliberate planning. It provides the brigade commander with a robust and complete staff. In short, it temporarily places the nucleus for current and future operations at the brigade main CP. The brigade S1 and S4 and key members of the FSB usually relocate to the main CP during critical planning times. There are cases

Engineer Estimate	Content	Engineer Annex Format
Develop the scheme of engineer operations for— <ul style="list-style-type: none"> • Force allocation • Task organization 	Task organization of engineer units (includes who they support and in what command/support relationship)	Task organization
Conduct IPB	Aspects of the weather, terrain, and enemy M/S activities that significantly impact engineer missions	1. Situation <ul style="list-style-type: none"> a. Enemy
Conduct EBA of the— <ul style="list-style-type: none"> • Terrain • Enemy M/S capability 	Missions and plans of higher and adjacent engineers that impact on the current planning should be identified	<ul style="list-style-type: none"> b. Friendly
Develop higher HQ OPOD and engineer annex	Changes in task organization which occur during the execution that need to be clarified	<ul style="list-style-type: none"> c. Attach/detach
Receive restated mission from the supported unit	Mission statement of the supported unit	2. Mission
Develop the scheme of engineer operations	Concept of the engineer operations to support the maneuver	3. Execution <ul style="list-style-type: none"> a. Scheme of engineer operations
	Details on the use of obstacles and SCATMINES	<ul style="list-style-type: none"> b. Obstacles c. SCATMINES
Analyze mission	Missions to engineer units: <ul style="list-style-type: none"> • Task-organized to brigades • Under brigade troops 	<ul style="list-style-type: none"> d. Subunit missions
War-game and refine the engineer plan	Instructions common to two or more engineer units	<ul style="list-style-type: none"> e. Coordinating instructions
Develop the scheme of engineer operations	Allocation of M/S mission resources that should be identified	4. Service support <ul style="list-style-type: none"> a. Command-regulated supplies
Allocate resources	Method of mission sustainment	<ul style="list-style-type: none"> b. Forward supply point (FSP) locations c. Transportation d. Medical
Finalize the engineer plan	Method of unit sustainment	<ul style="list-style-type: none"> e. HN assistance
Finalize the engineer plan	Location of engineer CPs Special C2 arrangements required reports	5. Command and signal

Figure 2-8. Relationship of the engineer estimate to the engineer annex

when the staff will mass at the brigade main to facilitate a more deliberate planning process. For example, the brigade staff may consolidate at the brigade main during the initial development of the brigade OPORD.

During a staff surge, the brigade engineer and the company commander(s) must be present at the planning session. The company commander may opt to have his XO and/or ISG present to speed up company planning. Otherwise, the commander may opt to communicate with his XO and/or ISG by wire, radio, or other means at the company CP.

Command and Support Relationships

Engineer units are normally task-organized to the brigade in either a command or support relationship. Command relationships prescribe the supporting engineer unit's chain of command and the degree of authority that a commander exercises over it. Support relationships show the manner of support that the supporting engineer commander receives.

Command Relationship. Command authority over engineer units is given to the maneuver commander when he requires responsive engineer forces. Command relationships can be attached or OPCON.

An attachment is appropriate when a subordinate maneuver commander needs task organization or direct-command authority over engineer units and when time, distance, or communications prevent the parent engineer HQ from providing adequate logistical support. Contingency operations are an example of when the light engineer company is attached to the maneuver brigade. Time, distance, and communications all play a part in this decision. A key factor to attachments is ensuring that they are accomplished as early as possible to ensure full integration into the maneuver force.

OPCON is appropriate when a subordinate maneuver unit needs task organization or direct-command authority over engineer units; however, the parent engineer HQ can still provide logistical support. This is also a method of giving the maneuver commander authority over a unit when the duration of the operation is short and it can be supported without impacting the established logistics infrastructure. It is the parent engineer unit's responsibility to coordinate CS and CSS for subordinate units. An example of OPCON within the light brigade is multiple corps engineer units being used to support the brigade during a search-and-attack operation. The brigade commander requires task-organization authority over the corps units when he cannot sustain its logistical requirements and search-and-attack operations are not going to be over an extended period of time.

Support Relationship. Command, administrative, and logistical responsibilities remain with the parent engineer unit in a support relationship. The engineer unit commander organizes the unit and suballocates tasks in a manner that most effectively meets the needs of the maneuver commander. Support relationships can be DS or GS.

ADS relationship is appropriate when the subordinate maneuver commander needs a high degree of responsiveness from engineers but does not need task-organization authority. A higher HQ often uses this relationship when it anticipates a change to the engineer task organization that requires the shifting of engineer units to other locations.

A GS relationship is appropriate when the higher HQ requires central control and flexibility in employing limited engineer forces. Engineers in the rear areas are usually employed in GS.

ENGINEER COMPANY C2

The engineer company's C2 system must be reliable, responsive, and durable. It must withstand crises, even the loss of the commander, and continue to function and provide support to the brigade. The engineer company's C2 system is the most complex system in the company. However, its output must be clear and concise instructions that focus the entire unit toward the goals and objectives of the company and the brigade commander.

One of the challenges facing the engineer company and its commander is achieving the proper mix of C2. While this mix is situation-dependent, the commander must strive to emphasize command and reduce control measures that restrict his subordinate's freedom of action.

COMMAND

Command is the process that instills the commander's will among his subordinates. It provides focus and direction to the company. The commander's leadership is an integral part of command.

CONTROL

Control, as the counterpart of command, follows up a decision and minimizes deviation from the commander's concept. It also provides supervision to the operations while synchronizing all systems and activities.

SYNCHRONIZATION

The commander must avoid depending on close control of his platoons to achieve synchronization. This slows execution and limits his subordinates' initiative. Synchronization initiated at the brigade is maintained during execution by the proper decision of subordinates. A clear understanding of the commander's intent and a

simple effective concept are the keys to maintaining engineer-company synchronization on the brigade battlefield.

C2 PRINCIPLES

To achieve his C2 goal, the commander continually applies the following principles during operations:

- Expect uncertainty.
- Minimize leader intervention.
- Maximize subordinate planning time.
- Give subordinates maximum freedom of action.
- Command/lead well forward.

Expect Uncertainty

The commander must understand the environment of the battlefield. Force-projection operations are inherently dynamic, decentralized, and nonlinear. The battlefield environment frequently degrades the commander's ability to communicate with his subordinates. This fact, combined with the violence and nature of war, often prevents the commander from knowing what is transpiring beyond his immediate span of control. The tactical situation used as a basis for planning always changes before execution; therefore, flexibility is essential.

Minimize Leader Intervention

The decentralized nature of the light brigade battlefield requires the absolute minimum of leader intervention during execution. Not only is this important to mission accomplishment, but common decentralized engineer task organizations necessitates nonintervention of leaders

during an operation. When the company's subordinate leaders expect the commander to make a decision or initiate an action on the battlefield, they are reluctant to take action. In those instances where precise control is required (for example, an on-order mission), the commander's goal is to provide the subordinate with the criteria and the information necessary to make the decision and execute.

Maximize Subordinate Planning Time

This is one of the biggest challenges to the company commander. While most planning takes place at the engineer company and the brigade, the squads and platoons also require time to conduct troop-leading procedures (TLP) (for example, precombat inspections (PCIs) and rehearsals). This is especially critical when a subordinate unit is task-organized away from the company. SOPs and WARNORDs are essential tactical time-management tools.

Give Subordinates Maximum Freedom of Action

Given the expected battlefield conditions, leaders at every level avoid unnecessary limits on their soldier's freedom of action. The leader at the point of decision must have the knowledge, the training, and the freedom to make a decision that best supports the commander's intent.

Command/Lead Well Forward

The company commander must position himself where he can best direct the fight of his company. The commander's leadership is most effective face-to-face, in other words, when he can see the tactical situation and his soldiers can see him. Since he cannot be everywhere on the brigade battlefield, the commander focuses his attention on the

decisive actions of his unit. During the execution, this may be with the main effort or possibly with the brigade commander in the tactical CP. During the initial stages of a new brigade plan, the commander's place is usually at the brigade main CP, working with the brigade engineer. This serves to ensure that the—

- Plan is executable.
- Commander's company is briefed early on the future operation.
- Engineer plan is adapted to the conditions that truly exist on the battlefield.

COMMANDER'S INTENT

The commander's intent describes the desired end state of the mission. It is a clear and concise expression of the purpose of the operation. The ultimate purpose of an intent is to help subordinates pursue the mission's desired end state without further orders, even when the operation does not unfold as planned. Knowing the commander's intent enables subordinates to use their initiative during the execution of an operation. It must be clearly and completely understood by the entire company through the following means of communication:

- Written.
- Face-to-face.
- Radio.
- Any other communications technology available to the unit.

The company commander begins to form his intent as he analyzes the mission assigned to him by the brigade. The company commander's intent is the focus for the entire engineer planning process. His intent is refined as the planning process evolves and as information is gained and evaluated.

KEY PERSONNEL DUTIES AND RESPONSIBILITIES

The engineer company must be able to accomplish a number of tactical, logistical, and administrative tasks. To accomplish these, the duties and responsibilities of key personnel in the company must be defined and understood. The duties and responsibilities of the company commander, the XO, and the 1SG are covered in the following paragraphs. The remainder of the company HQ is covered in *Appendix C*.

Company Commander

The company commander is responsible for everything the company does or fails to do. This includes the tactical employment, training, administration, personnel management, and sustainment of his company. The company commander must fully understand the capabilities of his soldiers and know the best method of employing them. He must also completely understand the capabilities of the light brigade and battalions and how they fight.

Company Responsibilities. The company commander is the engineer executor on the brigade battlefield. He has unit control and command responsibility over his unit. One of his greatest challenges is maintaining an execution focus for the brigade commander while sustaining his staff-level input to the brigade engineer. The company commander is ultimately responsible for—

- Writing the company OPORD that supports the brigade commander's intent and concept of the operation and the brigade's engineer annex.
- Providing mission-oriented C2 to his engineer company.
- Supervising the execution of his units' engineer support within the brigade area.
- Achieving integration with the supported brigade through his link with the brigade engineer and the brigade commander's C2 organization. (C2 assets from the company are key in facilitating this process.)
- Dividing duties among the key leaders of his company. Each subordinate must know his job and how the company functions while executing its missions. The decentralized nature of light brigade operations dictates that the company and its subordinate units must be able to function in any mission or situation with minimal guidance and control from higher HQ. Although every situation is different, the company SOP standardizes the way tasks are accomplished and simplifies the execution of decentralized operations.
- Remaining focused on engineer missions rather than the method of his subordinates' execution. The company commander must not give his subordinates missions and guidance that conflict with those of the maneuver brigade and the supported battalion commanders.
- Assuming the duties of the brigade engineer, as required. He is also an advisor on his unit's capabilities, limitations, and current operational status; however, he normally passes this information through the brigade engineer. In the absence of the brigade engineer, the company commander's focus is more on brigade planning and less on unit command.
- Providing mission and status reports to the brigade commander and the brigade engineer (and his immediate engineer commander). These report should be current and accurate so the brigade commander and the brigade engineer

can make decisions that could influence the battle.

The company commander must often delegate authority to subordinates. This process reinforces and strengthens the entire chain of command. Commanders must ensure that they do not abuse this delegation of authority. Responsibility can never be delegated.

Brigade Responsibilities. The company commander supporting the brigade is the primary executor of engineer missions that the brigade develops. The brigade engineer, with the brigade staff's assistance, ultimately develops the engineer missions. The company commander plays a vital role in mission identification and development and in establishing engineer mission priorities. He accomplishes this by integrating with the brigade engineer during the military decision-making process concurrently with his TLP. This ensures that fundamental considerations about mission execution are synchronized with the brigade plan and the supporting engineer annex. This early and continuous involvement also serves to ensure that the company commander and his subordinates remain proactive during mission planning, preparation, and execution. *Figure 2-9* shows an example of the company commander's integration into the brigade staff's planning process.

This parallel work and the synchronization of the company commander and the brigade engineer serve to accomplish two primary functions. They provide—

- An executor-level input that enhances the brigade engineer's input into the brigade's military decision-making process and his engineer estimate.
- The company commander with detailed insight into future operations, decisions, scheme of maneuver, and

ultimately, the engineer plan to support these operations.

The company commander and the brigade engineer must weigh the mission requirements with the supporting engineer unit's capabilities and design a COA to accomplish the brigade mission. If the requirements exceed the engineer unit's current capabilities, the brigade engineer sets priorities and requests additional support from the DIVEN battalion or supporting corps engineer units.

When the tactical situation allows the company commander to conduct his TLP parallel to the military decision-making process, it helps synchronize key activities providing mission support to the brigade as a whole. When the brigade order is issued, the engineer company and its platoon already know the task organization of engineers. The platoon leaders can then initiate their TLP and still be present with their supported battalion to receive the brigade's OPORD. This places the three key echelons of engineer C2 together at one time (brigade engineer, company commander, and platoon leaders), which facilitates coordination and clears up any discrepancies or changes to the brigade plan.

Figure 2-9 depicts the mutually supporting efforts of the brigade engineer and the company commander. The company commander's level of involvement in the planning process is situation-dependent. It is vital, however, that he is involved from the beginning and as much as possible during the planning process.

The company commander returns to the company CP after receiving the brigade commander's decision on the mission. He finalizes his plan and issues the company OPORD. The platoons can then finalize and refine their TLP based on this OPORD and

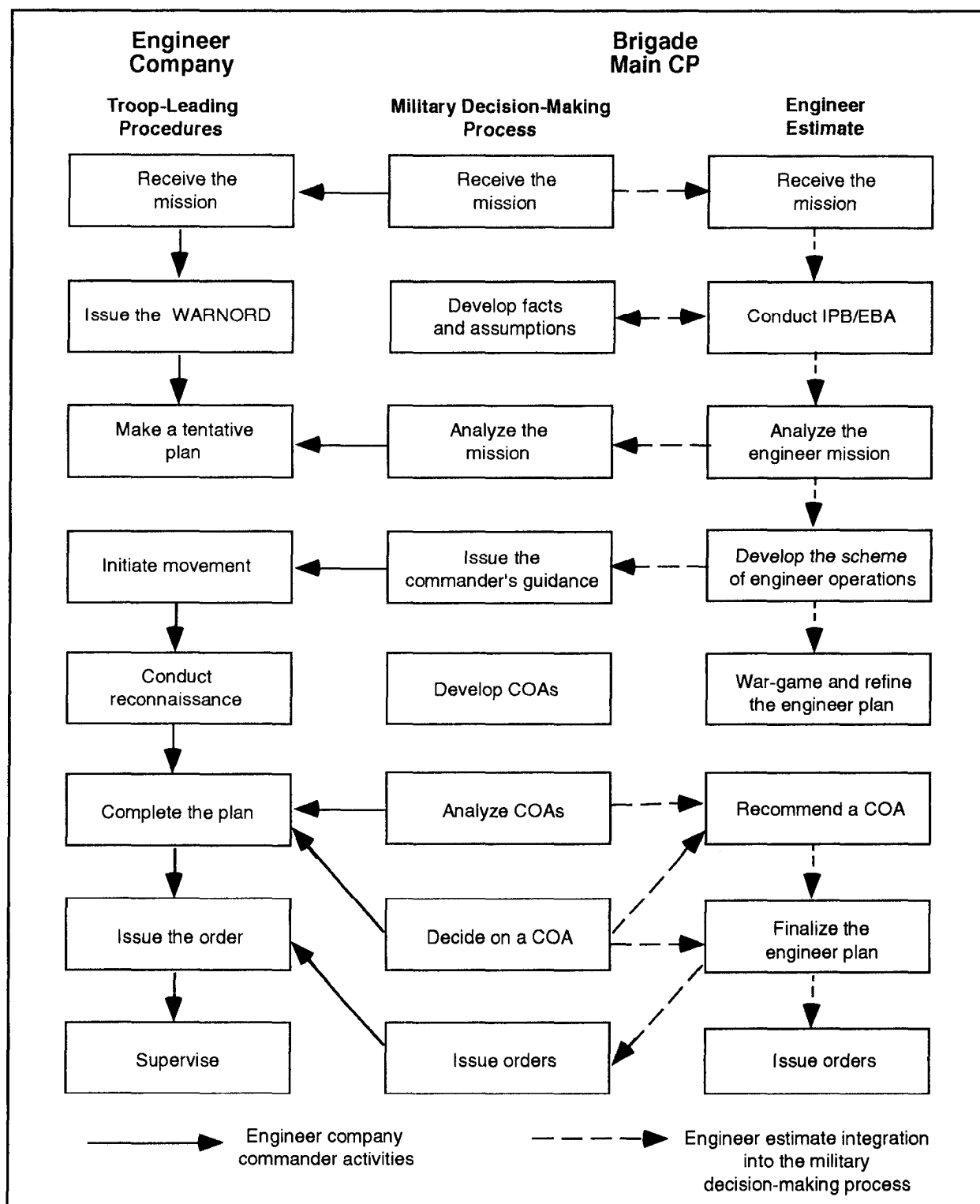


Figure 2-9. Engineer company commander integration into the brigade staff's planning process

their pending task organization to the maneuver battalions. The company commander and the platoon leaders displace to the brigade main CP to receive the brigade OPORD. Platoon leaders link up with their supported battalion and then subsequently move to the battalion CP to integrate with the battalion's military decision-making process. In the platoon leader's absence, the platoon sergeant continues the platoon's TLP, awaiting any further guidance from the platoon leader (such as mission-essential rehearsals, displacement of the platoon, or PCI). Once the battalion plan is finalized, the platoon OPORD can be finalized and issued to the platoon.

The platoon sergeant's role during the battalion's planning process is vital. The platoon leader is totally consumed with providing staff input to the battalion's planning process. To provide the platoon with insight into the upcoming mission, the platoon sergeant conducts the actions required to ensure mission readiness, to include involvement in the battalion's planning process. (The platoon's TLP can begin with issuing the company commander's WARNORD early in the battalion's planning process. However, this is usually not possible because of on-going mission support to the brigade.)

Executive Officer

The XO is second in command. His primary role is to help the company commander direct the fight of the company and ensure its seamless integration into the brigade combat, CS, and CSS structure. His responsibilities include—

- Receiving and consolidating unit and mission reports from the platoons and submitting them to the BMEC, the brigade rear CP, and the parent engineer battalion commander, as required.

- Assuming command of the company, as required.
- Establishing and operating the company CP. This CP has two primary tasks:
 - Facilitate the C2 process of the company.
 - Augment and synchronize the engineer C2 organization in support of the brigade.
- Planning and supervising the engineer company CSS.
- Ensuring that PCIs are complete throughout the company.
- Planning and coordinating all logistical support with the FSB, the parent engineer battalion, and other agencies outside the company.
- Preparing or assisting in the preparation of the company OPORD, specifically focusing on paragraph 4.
- Coordinating with higher, adjacent, and supporting units. This function is vital when the company receives support from other units of the parent battalion (equipment, maintenance, or medical assets) or corps engineers.

The XO has a secondary role as the brigade rear engineer. In this role, he accomplishes those tasks required to integrate and synchronize engineer support for rear operations. These tasks include—

- Monitoring rear-area engineer operations.
- Anticipating unit-specific future engineer requirements.
- Executing engineer unit sustainment and coordinating future unit sustainment needs with the brigade rear CP and the FSB.

- Providing engineer expertise in the brigade rear area and coordinating directly with all brigade rear-area CS and CSS elements.
- Working closely with the brigade engineer to facilitate brigade-level engineer C2.

First Sergeant

The ISG is the senior NCO and usually the most experienced soldier in the company. He is the commander's primary tactical advisor and expert on individual and NCO skills. He assists the commander in planning, coordinating, and supervising all activities that support the unit mission. He operates where the commander directs or where his duties require him. His responsibilities include—

- Being involved early in the planning process to provide quality control in the execution of engineer missions and logistics operations.
- Checking on the welfare of the soldier, as a second set of eyes for the commander. He may be located with the company commander.
- Enforcing the tactical SOP.
- Planning and coordinating training.
- Coordinating and reporting personnel and administrative actions.
- Supervising supply, maintenance, communications, field hygiene, and medical evacuation (MEDEVAC) operations.
- Ensuring that CSS priorities are requisitioned and replenished.
- Monitoring logistics status and submitting reports to the company XO and the brigade rear CP, as required.
- Supervising, inspecting, and observing matters the commander

designates. He may observe and report on the status of obstacles and survivability within the brigade.

- Assisting and coordinating with the XO. He should also be prepared to assume the XO's duties, as required.

Succession of Command

The engineer company's chain of command exercises the succession of command if leaders become casualties. The normal succession of command is commander, XO, platoon leaders (by seniority), 1SG, and then NCOs (by seniority).

To reestablish the chain of command, the new commander immediately establishes communications with the supported brigade commander, the parent engineer battalion, and subordinate units of the company. Information that is passed focuses on the—

- Current unit situation (mission and unit).
- Receipt and passing of status reports and any changes to the mission.
- Issuing any FRAGOs, as required.

Once the information is passed, the unit continues operations. Company tactical SOPs cover reestablishing the chain-of-command requirements, addressing items such as communications requirements and critical actions key leaders take.

COMPANY CP

The engineer company CP has two primary missions. It—

- Commands and controls the company and any other task-organized elements.
- Establishes, or functions as, the BREC.

The company CP's primary purpose, in addition to those outlined under the BREC, is to—

- Provide communications with higher, lower, supporting, and adjacent units.
- Support the commander in planning, coordinating, and issuing the company OPORDs.
- Support continuous company operations.

The company CP does not have a set organization. It is normally configured with the XO, 1SG, and other personnel and equipment required to support the C2 process and the mission. When supporting the light brigade, the company CP is normally located in the BSA and is physically linked to the brigade rear CP. This facilitates its C2 and sustainment missions and its role as the BREC. C2 requirements for the company CP are explained in *Mission Training Plan (MTP) 5-025-31*.

The company CP—

- Provides the engineer unit with C2 of its organic engineer assets in the brigade sector.
- Manages and maintains equipment assets task-organized to it while working in the brigade sector.

The brigade commander commits engineer assets and assigns mission priorities while the company CP (according to task-organization standards) ensures its subordinate platoons are provided unit sustainment.

COMPANY C2 PROCESS

Engineer leaders use the C2 process to—

- Ascertain the current situation.
- Make decisions.
- Track operations.

The military decision-making process and the engineer estimate are the commander's primary planning tools, whereas, the TLP

are the process by which he receives, plans, and executes a mission. Two other tools that are part of the C2 process are the—

- Estimate of the situation.
- METT-T analysis.

Figure 2-10 shows the relationship between TLP, the estimate of the situation, and the METT-T.

Troop-Leading Procedures

TLP begin when a mission is received and end when that mission is completed. They are as follows:

- Receive the mission.
- Issue the WARNORD.
- Make a tentative plan.
- Initiate movement.
- Conduct reconnaissance.
- Complete the plan.
- Issue the order.
- Supervise.

The sequence of individual TLP are not rigid. TLP can be modified to meet the mission situation and the available time. Some steps are done concurrently while others may go on continuously throughout the operation. Ultimately, TLP are time-savers (see *Figure 2-10*). The leader conducts them in the order that most effectively uses the available time.

Receive the Mission. A mission may be received as either a written or verbal WARNORD, OPORD, or FRAGO. There will be times when the leader deduces a change in the mission based on the current situation.

Once the commander identifies an upcoming mission, he begins to prepare the company for it. The company commander

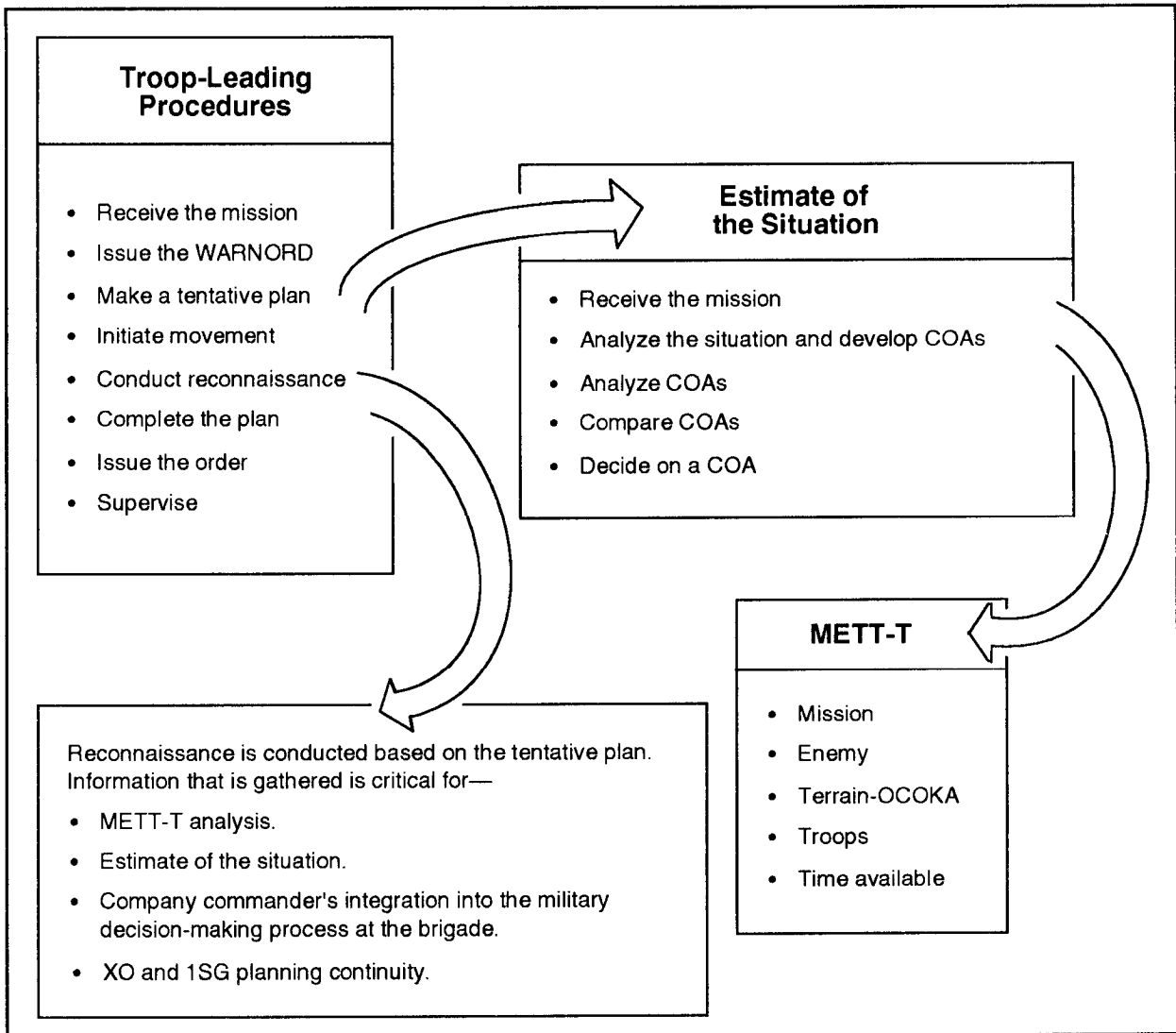


Figure 2-10. Relationship between the estimate of the situation, TLP, and the METT-T

conducts an initial METT-T analysis to determine the requirements for his WARNORD. With the information available, the commander sets his time schedule by identifying the actions that must be done to prepare the company for the operation. These preparatory actions are identified by a preliminary consideration of the information on the mission, enemy, terrain, and troops (METT). (It is key that the company commander includes his ISG and XO, when available, in this process. This

ensures continuity in the planning process for the company when the commander goes to the brigade main CP for the military decision-making process.) As time allows, an initial reconnaissance is conducted to allow the commander to better understand the effects of the terrain on the operation. This initial reconnaissance will prove vital to the brigade staff's planning process. The commander then develops his time schedule by reverse planning, starting with the mission execution time and working backwards.

The commander must ensure that his subordinates have sufficient time for their own planning needs. The “one-third, two-thirds rule” is used whenever possible. This leaves the bulk of the time available for subordinate leaders to use for their planning and preparation. This is a tentative time schedule that may require an adjustment as the TLP process continues.

Issue the WARNORD. It is imperative that the commander issue the WARNORD immediately or as soon as possible; he should not wait for more detailed information. The WARNORD can be updated, as needed, with more WARNORDs. The WARNORD lets units prepare for combat as soon as possible after being alerted of an upcoming mission. As a minimum, the WARNORD includes the—

- Situation.
- Mission type (attack, defend, or delay).
- Start time of the operation.
- Time and place to issue the OPORD.

The WARNORD normally involves several standard actions that should be addressed in the engineer company SOP.

Make a Tentative Plan. Tentative plans are the basis for the OPORD. The leader uses the commander’s estimate of the situation to—

- Analyze METT-T information.
- Develop and analyze COAs.
- Compare COAs.
- Decide on a COA.

There may not be enough information to decide on which COA is best at this point. The leader uses the time available to complete the parts of the plan that are sure to be used when the brigade order is issued. The commander from the brigade main CP

can update the tentative plan during the military decision-making process. This allows the XO to continue to develop the commander’s tentative plan, collect information for it, and receive additional instructions from the commander.

Initiate Movement. Based on the initial plan, immediate movement of the company or some of its units may be required. Movement instructions can be given in a WARNORD. The commander coordinates security and fire support for all company moves.

Conduct Reconnaissance. Reconnaissance must be a continuous process during TLP. It should be planned and conducted to adjust or confirm the tentative plan. When possible, the commander and platoon leaders reconnoiter the terrain where the operation will be conducted. (It is essential that the reconnaissance is synchronized with the current operations of the maneuver battalions.) While this is being done, the 1SG and the platoon sergeants supervise the company’s preparations for the upcoming operation. Information gained through reconnaissance will prove vital to the brigade’s military decision-making process. Frequently, the brigade engineer will not be able to conduct an on-site reconnaissance and will rely on a map reconnaissance.

Complete the Plan. The brigade commander gives the company commander guidance on the upcoming mission. After the company commander has gathered all available facts, he revises his tentative plan. Usually, the company commander’s involvement in the development of the brigade plan precludes significant changes to his tentative plan. The engineer company CP is able to update or modify the company’s plan during the military decision-making process due to its continuous communications with the BMEC.

Mission-essential tasks listed in the plan should be covered in either the OPORD, the FRAGO, or the SOP. See *Appendix B* for an example of an OPORD. The execution matrix is a tool to help complete and execute the plan. However, it is not designed to replace a verbal order, an overlay, a sketch, or a terrain model. It is designed to help the company commander develop and execute the order. The execution matrix also helps the engineer company CP, as well as the brigade engineer, track the actions of the company. See *Appendix B* for an example of an execution matrix.

Issue the Order. Preferably, the company commander issues the order while viewing the terrain on which the operation will be conducted. This allows the company commander to maximize the use of the terrain. Maximum use of visual aids, such as sketches or terrain models, enhances the understanding of the order by subordinates. In those instances where the company commander has issued a tentative plan before the leader's reconnaissance, he can issue a FRAGO to complete his plan before execution.

Supervise. After the company commander issues the order, subordinate leaders should use the remaining time to complete their TLP. No matter how good the brigade and supporting engineer company plans are, they will fail if they are not managed properly. Subordinate leaders conduct inspections and rehearsals and continually coordinate their plans, both internal and external to the unit.

During PCIs, check the following:

- Weapons and ammunition.
- Uniforms and equipment.
- Special engineer equipment required for the mission.

- Other mission-essential equipment (MEE).
- Soldiers' knowledge and understanding of the mission and their specific responsibilities.
- Communications.
- Rations and water.
- Camouflage.

Rehearsals are always conducted. They are essential to ensure mission success, complete coordination, and subordinate understanding. The company WARNORD should provide subordinate leaders with enough detail for them to schedule and conduct rehearsals of drills and SOPs before receiving the company OPORD. Rehearsals conducted after the company OPORD can help the leaders focus on mission-specific tasks. In those instances where the platoons will be closely supporting a maneuver unit (for example, during assault or covert breaches), rehearsals are very important. These rehearsals facilitate and focus the combined arms rehearsals that will be conducted once the engineers link up with the maneuver forces.

Rehearsals should be conducted on terrain that is similar to the objective area. When possible, mock-ups of the objective should be used, with the actual rehearsals being conducted under the same light and weather conditions. Rehearsals include—

- Soldier and leader back briefs of individual tasks.
- Sand tables, or sketches, to portray the execution of the plan.

Orders

All commanders issue timely, clear, and concise orders to give purpose and direction to subordinate planning, preparation, and execution. The company commander issues orders to his subordinate units to execute

the scheme of engineer operations for brigade operations, as necessary. Orders transform the brigade commander's scheme of engineer operations into clear, concise engineer missions. They combine the concept of engineer support with engineer unit-specific plans needed to accomplish engineer missions and sustain the engineer force. In short, they bind the entire engineer plan together and ensure unity of engineer effort.

The company commander uses clear, concise unit and supported brigade orders to provide the necessary engineer C2. As a commander, he uses his own unit orders to command engineer forces remaining under his control for the operation. These orders also allow him to provide functional control over his organic or task-organized engineers. However, the bulk of the engineer missions in the close operation are conducted by engineers supporting the maneuver battalions.

Regardless of the command support relationship, the company commander must provide the brigade commander with functional control of his task-organized engineers within the brigade and the maneuver battalion's sectors to ensure unity of effort. The routine decentralized nature of engineer support to the brigade (combined with the challenges of command support relationships to the battalions) and the overall command authority of the brigade commander complicate giving orders directly to supporting engineers. Therefore, the company commander exercises functional control of subordinate engineer efforts through his involvement in the development and use of brigade orders and supporting engineer annexes.

Engineer unit orders are used to focus subordinate units' planning and preparation and to increase their integration at the beginning of the brigade's and the maneuver battalion's planning. These orders are not issued to undermine the authority of the

supported commander; ultimate command authority lies with the supported commander. Therefore, engineer unit orders must be coordinated with the brigade commander and his staff. These orders enable the subordinate units' planning to be more responsive to the rapid decision cycle of the brigade. For example, the engineer company and the engineer platoons may receive WARNORDs before their supported commander because of their direct link to the brigade staff. The company commander must use this as an asset and not allow it to grow into a liability. These orders are information on which to base planning. They are not to be executed without the coordination and the consent of the supported commander.

There are essentially three types of orders issued by the company commander. They are—

- WARNORDs. They give subordinates advance notice of operations that are to come and the time to prepare for them. WARNORDs should be brief but complete.
- OPORDs. They give subordinates the essential information needed to carry out an operation. OPORDs are prepared in a five-paragraph format to organize thoughts and ensure completeness. When possible, the OPORD is issued while observing the AOs.
- FRAGO. They provide timely changes to existing orders. FRAGOs are normally used to issue supplemental instructions or changes to a current OPORD while the operation is in progress.

On the fluid battlefield, the company commander most frequently uses the WARNORD and the FRAGO. His intent is to give his subordinate leaders the necessary framework within which to take initiative.

Freedom of subordinate action, mission focus, and clear intent are all vital components of effective engineer unit orders. The company commander avoids unnecessary

detail and does not restate doctrine or established SOPs. He ensures that SOPs are developed that simplify the use of essential planning time during TLP.